

JFSP 2001 Principal Investigator Workshop

Project Title: Evaluating the effects of prescribed fire and fuels treatment on water quality and aquatic habitat

Project Location: Blue Mountains, NE Oregon & SE Washington; Umatilla NF

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Description of Project: This study is designed to examine the effects of prescribed fire and mechanical fuel treatments on surface erosion, stream sedimentation, channel morphology, and other water quality parameters. Intensive study sites are located in the Skookum Experimental Watersheds and a more extensive array of hillslope erosion plots are located in fuel treatment projects throughout the Blue Mountains. The Skookum watersheds have been gauged and baseline data are available for stream discharge and sediment yield. We are measuring hillslope erosion, surface-sediment transport, and sediment delivery to streams on control and treatment sites within the Skookum Experimental Watersheds for one year prior to treatment, and for two years post treatment. The combination of gauged watersheds and long-term records of discharge, suspended sediment and bedload makes it possible to examine treatment effects using watershed-scale sediment budgets. Measurements from the extensive hillslope erosion plots are limited to rates of hillslope erosion and hillslope-sediment transport. The extensive plots are located on both control and treatment sites, but do not include any pre-treatment data. Data from both the watershed-scale study and the extensive plots will be used to refine erosion and sediment delivery models used in planning and assessing management activities.

Status Report: We have completed the first year of this three-year study. During the summer field season, we established sets of hillslope erosion plots at 4 sites in the Skookum Experimental watersheds. The sites are north-slope treatment, north-slope control, south-slope treatment, and south-slope control. At each site, there are 3 upper-slope, 3 mid-slope, and 3 toe-slope plots. A recording, tipping-bucket raingauge was installed at the mid-slope position in each of the four study sites. We also relocated and resurveyed channel reference reaches established in 1996 in both the treatment and control watersheds. We extended the stream temperature monitoring locations in both the treatment and control watersheds, as well as in mainstem Skookum Creek to monitor treatment effects on stream temperature. We expect that the Skookum treatment watershed will be treated with prescribed fire in fall 2003.

During the summer 2002 field season, we also established sets of hillslope erosion plots at four sites in the Red Fir fuel treatment project, with the same study design used in the Skookum Watersheds (N- & S-slope treatment; N- & S-slope control). The Red Fir project was burned in late fall 2002 and installation of the treatment plots was completed the following week. The next major storm, one-week later, buried the site with snow and we are waiting for spring to begin taking erosion measurements.

We have also made a major investment in locating, QA/QC, documenting, and archiving long-term data collected from the Skookum Watersheds from 1992 through the present. Stage height records from Fisher-Porter punch tapes (1992-2000) and digital files (2001-2002) have been edited and reduced to streamflow data. Suspended sediment and bedload data have been entered into Excel spreadsheets, quality checked, and used to compute daily and annual sediment loads. Organization and editing of stream temperature data from recording thermographs and precipitation data on Fisher-Porter punch tapes is in progress.

Issues/Concerns affecting the project: The project is progressing on time and within budget. Our only substantial concern remains the uncertainty that specific prescribed fires will be set within project areas, as scheduled.

